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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,056	08/04/2003	Rudolf M. Smaling	9501-73118	5525

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EXAMINER	
PATEL, VINIT H	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,056	SMALING, RUDOLF M.	
	Examiner	Art Unit	
	Vinit H. Patel	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Grieve et al., US Pub. No. 2002/0108306 A1.

Regarding claim 1, Grieve teaches a method of operating a fuel reformer [0008], comprising the steps of: determining the temperature of a reformate gas produced by the fuel reformer [0008], and adjusting an air-to-fuel ratio of an air/fuel mixture processed by the fuel reformer based on the temperature of the reformate gas [0008].

Regarding claim 2, Grieve teaches a method wherein: the fuel reformer has an air inlet valve associated therewith [0020], and the adjusting step comprises adjusting position of the air inlet valve based on the temperature of the reformate gas [0023].

Regarding claim 3, Grieve teaches a method wherein: the determining step comprises comparing the temperature of the reformate gas to a predetermined temperature value [0023-0025], and the adjusting step comprises reducing the air-to-fuel ratio of the air/fuel mixture if the temperature of the reformate gas is greater than the predetermined temperature value [0023-0025].

Regarding claim 4, Grieve teaches a method wherein: the fuel reformer has an air inlet valve associated therewith, and reducing the air-to-fuel ratio of the air/fuel mixture comprises adjusting position of the air inlet valve so as to reduce a flow of air advancing there-through [0023-0027].

Regarding claim 5, Grieve teaches a method the determining step comprises comparing the temperature of the reformate gas to a predetermined temperature value [0023-0027], and the adjusting step comprises increasing the air-to-fuel ratio of the air/fuel mixture if the temperature of the reformate gas is less than the predetermined temperature value [0023-0027].

Regarding claim 6, Grieve teaches a method wherein: the fuel reformer has an air inlet valve associated therewith, and increasing the air-to-fuel ratio of the air/fuel mixture comprises adjusting position of the air inlet valve so as to increase a flow of air advancing there-through [0023, 0031].

Regarding claim 7, Grieve teaches a method wherein: the determining step comprises sensing the temperature of the reformate gas with a temperature sensor [0027].

Regarding claim 8, Grieve teaches a fuel reforming assembly (Fig. 1), comprising: a fuel reformer 22, a temperature sensor 74, and a controller [0025]. While Grieve does not explicitly teach the controller is electrically coupled to both the fuel reformer and the temperature sensor, wherein the controller comprises (i) a processor, and (ii) a memory device electrically coupled to the processor, the memory device having stored therein a plurality of instructions which, when executed by the processor,

causes the processor to: (a) monitor output from the temperature sensor so as to determine the temperature of a reformate gas produced by the fuel reformer, and (b) adjust an air-to-fuel ratio of an air/fuel mixture processed by the fuel reformer based on the temperature of the reformate gas [0023-0031], it would be inherent that the controller is electrically coupled to both the fuel reformer and the temperature sensor, wherein the controller comprises (i) a processor, and (ii) a memory device electrically coupled to the processor, the memory device having stored therein a plurality of instructions which, when executed by the processor, causes the processor to: (a) monitor output from the temperature sensor so as to determine the temperature of a reformate gas produced by the fuel reformer, and (b) adjust an air-to-fuel ratio of an air/fuel mixture processed by the fuel reformer based on the temperature of the reformate gas in order for the apparatus to operate as intended [0023-0031]. See In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995).

Regarding claim 9, Grieve teaches a fuel reforming assembly (Fig. 1) further comprising an electrically-controlled air inlet valve 45 (Fig. 1), wherein: the air inlet valve is electrically coupled to the processor [0025], and the plurality of instructions, when executed by the processor, further cause the processor to adjust position of the air inlet valve based on the temperature of the reformate gas [0023-0027].

Regarding claim 10, Grieve teaches a fuel reforming assembly (Fig. 1) wherein the plurality of instructions, when executed by the processor, further cause the processor to: (a) compare the temperature of the reformate gas to a predetermined temperature value, and (b) reduce the air-to-fuel ratio of the air/fuel mixture if the

temperature of the reformate gas is greater than the predetermined temperature value [0023-0027].

Regarding claim 11, Grieve teaches a fuel reforming assembly (Fig. 1) further comprising an electrically-controlled air inlet valve 45, wherein: the air inlet valve is electrically coupled to the processor (controller) [0025], and the plurality of instructions, when executed by the processor, further cause the processor to: (a) compare the temperature of the reformate gas to a predetermined temperature value, and (b) adjust position of the air inlet valve so as to reduce a flow of air advancing there-through if the temperature of the reformate gas is greater than the predetermined temperature value [0023-0031].

Regarding claim 12, Grieve teaches a fuel reforming assembly (Figs. 1 and 2) wherein the plurality of instructions, when executed by the processor (controller) [0025], further cause the processor to: (a) compare the temperature of the reformate gas to a predetermined temperature value, and (b) increase the air-to-fuel ratio of the air/fuel mixture if the temperature of the reformate gas is less than the predetermined temperature value [0023-0031].

Regarding claim 13, Grieve teaches a fuel reforming assembly (Figs. 1 and 2) further comprising an electrically-controlled air inlet valve 45, wherein: the air inlet valve is electrically coupled to the processor (controller) [0025], and the plurality of instructions, when executed by the processor, further cause the processor to: (a) compare the temperature of the reformate gas to a predetermined temperature value, and (b) adjust position of the air inlet valve so as to increase a flow of air advancing

there-through if the temperature of the reformate gas is less than the predetermined temperature value [0023-0031].

Regarding claim 14, Grieve teaches a fuel reforming assembly (Fig. 1) wherein: the fuel reformer 22 comprises a reactor housing (Figs. 1 and 2), and the temperature sensor 72 (Fig. 2) s positioned in the reactor housing [0023].

Regarding claim 15, Grieve teaches a fuel reforming assembly wherein: the fuel reformer comprises a reactor housing (Figs. 1 and 2), and the temperature sensor 74 (Fig. 2) is positioned outside the reactor housing [0023].

Regarding claim 16, Grieve teaches a method of operating a fuel reformer comprising: operating the fuel reformer 22 (Fig. 1) so as to process an air/fuel mixture having a first air-to-fuel ratio during a first period of time [0023-0031], determining the temperature of a reformate gas produced by the fuel reformer during the first period of time, and operating the fuel reformer so as to process an air/fuel mixture having a second air-to-fuel ratio during a second period of time based on the temperature of the reformate gas, the air/fuel mixture having the second air-to-fuel ratio being different than the air/fuel mixture having the first air-to-fuel ratio [0023-0031].

Regarding claim 17, Grieve teaches a method wherein: the fuel reformer has an air inlet valve associated therewith [0023], the step of operating the fuel reformer so as to process the first air/fuel mixture having a first air-to-fuel ratio comprises positioning the air inlet valve at a first valve position [0021], the step of operating the fuel reformer so as to process the second air/fuel mixture having the second air-to-fuel ratio comprises positioning the air inlet valve at a second valve position [0021], the second

valve position being different that the first valve position [0021-0023].

Regarding claim 18, Grieve teaches a method wherein the determining step comprises sensing the temperature of the reformate gas with a temperature sensor [0023-0026].

Response to Arguments

Applicant's arguments filed June 15, 2006 have been fully considered but they are not persuasive.

Applicant principally argues that the cited reference, Grieve et al., US Patent Pub. No. 2002/0108306 A1, does not anticipate claims 1-18. Applicant bases his argument citing paragraphs [0020, 0029 and 0030] of Grieve to distinguish Grieve from Applicant's claimed invention. Applicant's principally argues that Grieve does not disclose a method and apparatus that adjusts an air to fuel ratio of an air/fuel mixture processed by a fuel reformer based on the temperature of the reformate gas. The Office respectfully disagrees.

A process claim is anticipated if the prior art device which in its normal and usual operation will perform the claimed function. *In re Ackenbach* 7 USPQ 268 (CCPA 1930). The Office cites paragraph [0008] of Grieve, which teaches a reformer which in normal operation, senses a temperature condition at a fuel reformer and adds air to a fuel reformer, anticipating Applicant's method of sensing a reformate temperature condition and adjusting the air/fuel ratio of a feed stream into a fuel reformer. Further disclosed in Grieve is a method (and an apparatus which performs the function) of controlling a reformer by sensing a temperature at the reformer [0008] wherein a sensor 74 is in

thermal communication (at or near the outlet 76) with the reformer 22 [0023; Fig. 2] thereby sensing a reformate temperature and in response to a sensed temperature, regulates the air to fuel mixed stream (air to fuel ratio) by regulating (adjusting) the air via air control valves 45, 46 [0020-0023; Fig. 2].

Furthermore, Applicant also argues that it claims "adjusting the air to fuel ratio in an air/fuel mixture based on temperature of the reformate gas," and that Grieve teaches a uniform air to fuel ratio. Applicant cited Grieve, paragraphs [0029, 0030]. However, Grieve teaches that the reformer may be regulated by adding air to the reformer [0029]. Regardless if an advantage of Grieve is a uniform air to fuel ratio of the air/fuel mixed stream, during normal operation of the reformer as taught in Grieve, the precise steps of Applicant's claims are taught: to control operation of a reformer by sensing a reformate temperature condition and adjusting the air to fuel ratio of a air/fuel mixed stream (as detailed in the paragraph above). Therefore, it is respectfully submitted that Grieve anticipates Applicant's claimed method and apparatus because each and every element of the claim is found expressly or inherently in the disclosure. See MPEP 2131.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Warren et al., US Patent No. 6,585,785 and Yamaoka et al., US Pub. No. 2001/0047622 A1.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinit H. Patel whose telephone number is (571) 272-0856. The examiner can normally be reached on 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VHP

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